



FILE NO. BK 95 PG 35
 DRAWING NO. _____
 SCALE 1" = 500'
 MINIMUM DEGREE OF ACCURACY 1:2500
 PROVEN SOURCE OF ELEVATION SPARTAN GAS CO
WELL 89-S-280 PERMIT 890
FL 2385.38

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF MINES.
 (SIGNED) C. J. Volney Jr.
 R.P.E. U.S. 92

PLACE SEAL HERE

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 FORM IV-6 (8-78)



DATE AUGUST 2, 1985
 OPERATOR'S WELL NO. 106-S-322
 API WELL NO. _____
47-109-0986
 STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
 DEPARTMENT OF MINES
 OIL AND GAS DIVISION

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS,") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
 LOCATION: ELEVATION 2257.50 WATER SHED LEFT FORK ROCKCASTLE CREEK
 DISTRICT CENTER 3 COUNTY WYOMING
 QUADRANGLE MATHENY 463 106 EC6 Pineville
 SURFACE OWNER ANDREW H. MCCOY, HEIRS ACREAGE 26.86 TR.
 OIL & GAS ROYALTY OWNER Virginia J. Tilley LEASE ACREAGE 26.86
 LEASE NO. _____
 PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____
 PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___
 TARGET FORMATION BIG LIME ESTIMATED DEPTH 3350
 WELL OPERATOR SONAT EXPLORATION CO. DESIGNATED AGENT WILLIAM M RYAN
 ADDRESS P.O. BOX 766 ADDRESS P.O. BOX 766
CHARLESTON WV 25323 CHARLESTON WV 25323

WR-35



State of West Virginia DEPARTMENT OF ENERGY Oil and Gas Division

Date March 27, 1986 Operator's Well No. 106-S-322 Farm McCoy Unit API No. 47 - 109 - 0986

WELL OPERATOR'S REPORT

OF DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil / Gas X / Liquid Injection / Waste Disposal / (If "Gas," Production / Underground Storage / Deep / ShallowXX /)

LOCATION: Elevation: 2395 K 2385 G Watershed Left fork Rockcastle Creek District: center County Wyoming Quadrangle Matheny

COMPANY Sonat Exploration Company ADDRESS P.O. Box 1513, Houston, TX, 7725-1513 DESIGNATED AGENT Dana Blackshire ADDRESS 3407 Kanawha Blvd. East, Charleston, WVA 25306 SURFACE OWNER see attachment 1 ADDRESS MINERAL RIGHTS OWNER Virgie J. Tilley ADDRESS Box 72, Pineville, WV, 24874 OIL AND GAS INSPECTOR FOR THIS WORK Arthur St. Clair ADDRESS PO Box 468, Brenton WV 24818 PERMIT ISSUED October 11, 1985 DRILLING COMMENCED 1/2/86 DRILLING COMPLETED 1/12/86 IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON

Table with 4 columns: Casing & Tubing, Used in Drilling, Left in Well, Cement fill up Cu. ft. Rows include sizes 13-100, 9 5/8, 8 5/8, 7, 5 1/2, 4 1/2, 3, 2, and Liners used.

GEOLOGICAL TARGET FORMATION Gordon Depth of completed well 4141 feet Rotary / Cable Tools Depth 4100 feet Water strata depth: Fresh 220', 650 feet; Salt n/a feet Coal seam depths: 540', 950', 1250' Is coal being mined in the area? ye

OPEN FLOW DATA Producing formation Gordon Pay zone depth 4034' Gas: Initial open flow Mcf/d Oil: Initial open flow Bbl Final open flow 189 Mcf/d Oil: Final open flow Bbl Time of open flow between initial and final tests hours Static rock pressure 420 psig (surface measurement) after 15 hours shut (If applicable due to multiple completion--)

Handwritten notes: 492, 189, 681 Mcf, FOF for well

APR 14 1986

(Continue on reverse)

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

1/22/86-Perf Gordon Sand from 4034-53' w/20 shots. Spot 12 bbls 28% HCl. Displaced 100 bbl gel pad. Displaced 120,000# 20/50 sd. at 15 bbl/M, ATP = 200#. BD-Hydrostatic. Sand laden X-link gel 640 bbl. Flushed w/65 bbl wtr. Total fluid 805 bbl, 12 bbl acid. ISIP = 50#, 15 min. SIP = 0.

1/25/86-Perf Big Lime Sand from 2910'-24' & 3087-92'. Frac w/10,000 gals of 28% HCL-75Q foam. Aug. TP=3300 psi. ISIP=2400 psi. Pumped at a rate of 32 BPM.

2/4/86-Perf the Ravenscliff Sand from 1800-35' w/36 shots. Pumped 1000 gal 28% HCL. Frac w/654 BW, 60M# of 20-50 sand with 80,000 SCF nitrogen.

WELL LOG

| FORMATION | COLOR | HARD OR SOFT | TOP FEET | BOTTOM FEET | REMARKS Including indication of all fresh and salt water, coal, oil and gas |
|------------------------------|-------|--------------|-------------|-------------|--|
| Ravenscliff Sand | | | 1781 | 1844 | Gas ck @ 1740 0 MCFCPD |
| Upper Maxon Sand | | | 2054 | 2064 | Gas ck @ 1926 18 MCFGPD |
| Middle Maxon Sand | | | 2345 | 2369 | |
| Lower Maxon Sand | | | 2612 | 2683 | Gas ck @ 2520 15 MCFCPD |
| Little Lime | | | 2698 | 2766 | Gas ck @ 2772 41 MCFGPD |
| el Big Lime | | } | 2805 | 3080 | Gas ck @ 3044 103 MCFCPD |
| White Big Lime | | | 3080 | 3244 | Gas ck @ 3174 122 MCFGPD |
| el Weir Sand | | | 3446 | 3510 | Gas ck @ 3740 110 MCFGPD |
| el Gordon Sand | | | 4020 | 4067 | Gas ck @ 4134 158 MCFGPD |
| from el log: bp thickness | | | T.D. = 4141 | | |
| Sunbury | 3850 | 23 | | | |
| Berea | 3882 | 8 | | | |
| U.D.U. | 3891 | | | | |

(Attach separate sheets as necessary)

Sonat Exploration Company

Well Operator

By: D.T. McPherson

Date: March 27, 1986

Note: Regulation 2.02(i) provides as follows:
"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including ... encountered in the drilling of a well."

7/85

RECEIVED
SEP 19 1985



1) Date: September 12, 1985
 2) Operator's Well No. McCoy Unit 106-S-322
 3) API Well No. 47-109-0986
 State _____ County _____ Permit _____

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENERGY, OIL AND GAS DIVISION
 DIVISION OF OIL & GAS
 DEPARTMENT OF ENERGY
APPLICATION FOR A WELL WORK PERMIT

- 4) WELL TYPE: A Oil _____ / Gas X /
 B (If "Gas", Production X / Underground storage _____ / Deep _____ / Shallow X /)
- 5) LOCATION: Elevation: 2,257.50' Watershed: Left Fork Rockcastle Creek
 District: Center 421 County: Wyoming Quadrangle: Matheny
- 6) WELL OPERATOR Sonat Exploration CODE: 46600 7) DESIGNATED AGENT William M. Ryan
 Address P. O. Box 766 Address P. O. Box 766
Charleston, WV 25323 Charleston, WV 25323
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED Name Arthur St. Clair
 Address P. O. Box 468
Brenton, WV 24818
- 9) DRILLING CONTRACTOR:
 Name _____
 Address _____
- 10) PROPOSED WELL WORK: Drill X / Drill deeper _____ / Redrill _____ / Stimulate X /
 Plug off old formation _____ / Perforate new formation _____
 Other physical change in well (specify) _____
- 11) GEOLOGICAL TARGET FORMATION, Big Lime 345
 12) Estimated depth of completed well, 3,350' feet
 13) Approximate strata depths: Fresh, 220', 650' feet; salt, N/A feet.
 14) Approximate coal seam depths: 540', 950', 1,250' Is coal being mined in the area? Yes X / No _____

15) CASING AND TUBING PROGRAM

| CASING OR TUBING TYPE | SPECIFICATIONS | | | | | FOOTAGE INTERVALS | | CEMENT FILLUP OR SACKS (Cubic feet) | PACKERS |
|-----------------------|----------------|-------|----------------|-----|------|-------------------|--------------|-------------------------------------|---------------|
| | Size | Grade | Weight per ft. | New | Used | For drilling | Left in well | | |
| Conductor | 13-3/8 | | | | X | 30' | 30' | By Hand | Kinds |
| Fresh water | | | | | | | | | |
| Coal | 8-5/8 | K-55 | 24 | X | | 1350' | 1350' | To Surface | Sizes |
| Intermediate | | | | | | | | | |
| Production | 4-1/2 | J-55 | 10.5 | X | | | 3350' | 100 SX | Depths set |
| Tubing | | | | | | | | | |
| Liners | | | | | | | | | Perforations: |
| | | | | | | | | | Top Bottom |

OFFICE USE ONLY
 DRILLING PERMIT

Permit number 47-109-0986

Date October 11 19 85

This permit covering the well operator and well location shown below is evidence of permission granted to drill in accordance with the pertinent legal requirements subject to the conditions contained herein and on the reverse hereof. Notification must be given to the District Oil and Gas Inspector. (Refer to No. 8) Prior to the construction of roads, locations and pits for any permitted work. In addition, the well operator or his contractor shall notify the proper district oil and gas inspector 24 hours before actual permitted work has commenced.)

The permitted work is as described in the Notice and Application, plat, and reclamation plan, subject to any modifications and conditions specified on the reverse hereof.

Permit expires October 11, 1987 unless well work is commenced prior to that date and prosecuted with due diligence.

| | | | | | | | |
|----------------|------------------|-----------------|-------------------|-------------------|-----------------|----------------|--------------|
| Bond: <u>✓</u> | Agent: <u>AB</u> | Plat: <u>MK</u> | Casing: <u>MK</u> | Fee: <u>41063</u> | WPCP: <u>MK</u> | S&E: <u>MK</u> | Other: _____ |
|----------------|------------------|-----------------|-------------------|-------------------|-----------------|----------------|--------------|

[Signature]
 Director, Division of Oil and Gas

NOTE: Keep one copy of this permit posted at the drilling location.